

## Short communication

# The first rapid onset optic neuritis after measles–rubella vaccination: case report

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## Abstract

During the largest mass campaign for measles–rubella (MR) vaccination 33,000,000 people with an age range of 5–25 years were vaccinated in Iran. Some complications were encountered, including a rare case of optic neuritis. In the past 30 years of medical literature, five cases of optic neuritis have been reported but all of them were developed at least 8 days after vaccination. We are supposed to report the first case of rapid onset optic neuritis in which the complication came out just in few hours in a 16 years old boy.

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## 1. Background

Many rare complications of vaccination are encountered and reported after mass campaigns for different vaccinations. The largest registered mass campaign for measles vaccination in the world was conducted in Iran in December 2003. In this campaign 33,000,000 people with an age range of 5–25 years were vaccinated for measles and rubella (MR). Nearly 601,000 of these people were vaccinated in Ardabil province north–west of Iran with a 99% coverage. Among the resulted complications we found and investigated a quite rare case of post-vaccination optic neuritis in a 16 years old boy.

## 2. Case presentation

The case is a 16 years old boy, living in Nir district north–west of Iran. During the mass campaign of measles–rubella vaccination, he was vaccinated at 9 a.m. 6

December 2003 in his school. Immediately after vaccination he developed a similarly vaso-vagal shock and, managed for it by the attending nurse staff. He came back the same afternoon to an urban health center complaining of severe vision loss. He was referred to Alavi university hospital in Ardabil.

### 2.1. Past medical history

He has been born, by a normal vaginal delivery. He had no history of a specific disease or hospitalization. He had not previous history of any ophthalmologic problem or hypersensitivity to drugs and food. He had a complete vaccination history based on Iranian Expanded Program on Immunization. He was vaccinated for measles two times once in his 9 months and once when he was 15 months old. His family history for any ophthalmologic or neurological diseases was negative.

### 2.2. Physical examination

The patient was visited by two ophthalmologists in Alavi university hospital and a private clinic of ophthalmology.

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Based on physical examination by them, his visual acuity was at hand motion and light perception level. Mild optic disc edema was found on ophthalmoscopy. High dose oral corticosteroids was started. 48 h after starting the treatment visual acuity increased to 2/10 in both eyes and disc edema disappeared.

Visual acuity did not improve any more until high dose intravenous corticosteroid was started and patient was referred to the clinic of retinal diseases in Labafnezhad university hospital in Tehran. After 3 days of hospitalization visual acuity increased as much as 20/40 for right eye and 20/50 for left eye.

The only positive ophthalmologic finding in computerized perimetry was mild central Scotoma in both eyes.

### 2.3. Neuralgic examination

The patient was visited by a neurologist. There was no specific neurologic finding in neurological examination or magnetic resonance imaging.

### 2.4. Rheumatologic investigation

Although there was no specific finding but Paraclinic studies for ruling out an antiphospholipid syndrome was appreciated which came back as negative.

## 3. Discussion

There have been some reports of optic neuritis as a complication of vaccination. Kawasaki reported two cases of anterior optic neuritis after influenza vaccination giving rise to permanent visual loss. He speculated it to be caused by an immune complex Vasculopathy [1]. There is also reports of optic neuritis after anthrax and yellow fever vaccination [2,3]. Hepatitis A and hepatitis B are also thought to cause post-vaccination optic neuritis [3,4]. Other vaccinations reported to be responsible for post-vaccination optic neuritis are OPV&DPT and DT [5,6]. Destefano et al. conducted a case–control study to evaluate the role of vaccination on development of demyelinating diseases including optic neuritis and Ms. They compared 440 cases with 950 controls and surprisingly concluded that vaccination against hepatitis B and influenza and tetanus and measles or rubella is not associated with an increased risk of multiple sclerosis or optic neuritis [7].

In a review article by gout it has been stated the post-vaccination optic neuritis can occasionally be counted as the first attack of multiple sclerosis. He also has stated that studies conducted to evaluate the role of HB vaccination failed to establish its causability.

Molecular mimicry between HB antigen and one or more myelin proteins, or nonspecific activation of auto reactive lymphocytes were considered to constitute possible pathogenesis for these adverse neurological events [8].

Roussat et al. Calculated the chance of developing later multiple sclerosis to be 20% among children with optic neuritis [9]. Borque et al. reported seven cases of acute encephalitis due to a measles epidemic in Spain. One of these cases developed optic neuritis [10]. There is no doubt that the risks of serious neurological disorders are much greater with the natural disease than after vaccination, and widespread immunization programmers are justified by the available evidence [11]. The six cases of optic neuritis after measles–rubella vaccination are reported during the last 30 years.

The first reported by kazarian was a 6 years old boy developing bilateral simultaneous optic neuritis 18 days after MMR vaccination [12]. Second and third ones developed optic neuritis after rubella vaccination [13,14]. The fourth and fifth cases were two 13 years old boy and girls, who developed optic neuritis 2–3 weeks after vaccination [11] in three out of five mentioned cases visual acuity improvement was good. It was the same as our case what was quite exceptional in our case contrary to other cases of post-vaccination optic neuritis, is that the time period between vaccination and ocular problem was very short, while in nearly all of other reported cases this period was at least more than 1 week. Considering the previous history of measles vaccination in this case and short period of developing complication, we suggest an immediate hypersensitivity reaction as the pathologic process of complication.

As a matter of neurologic and rheumatologic examination and paraclinic findings, we dare to rule out a current multiple sclerosis or antiphospholipid syndrome. Other ophthalmologic or neurologic cases are similarly ruled out. We are not convinced to accept vaso-vagal shock due to hypotension as a causative factor for development of optic neuropathy in this case.

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